WHAT IS CLAIMED IS:

1. A method of spatially filtering a digital image comprising the steps of:

a) receiving a source digital image including pixels corresponding to one or more different colors;

b) selecting a pixel of interest in the source digital image;

c) calculating two or more noise free pixel estimates for the pixel of interest using pixel values sampled in a local region about the pixel of interest;

d) selecting a final noise free pixel estimate for the pixel of interest by finding the noise free pixel estimate closest in value to the value of the pixel of interest; and

e) repeating steps b) through e) for other pixels in the source digital image to provide a spatially filtered digital image.

2. The method of claim 1 wherein step c) each noise free pixel estimate is independent from the value of the pixel of interest.

3. The method of claim 2 wherein step d) further includes subtracting the final noise free pixel estimate from the value of the pixel of interest to form a residual pixel value; and further including f) using the residual pixel values to estimate a noise characteristic value relating to the noise content of the source digital image.

4. A method of calculating a noise residual digital image from a source digital image, comprising the steps of:

a) receiving a source digital image including pixels corresponding to one or more different colors;

b) selecting a pixel of interest;

c) calculating two or more noise free pixel estimates for the pixel of interest using pixels sampled in a local region about the pixel of interest;

d) selecting a final noise free pixel estimate for the pixel of interest by finding the noise free pixel estimate closest in value to the value of the pixel of interest;

e) calculating a noise residual pixel value by calculating the difference between the value of the pixel of interest and the value of the final noise free pixel estimate; and

f) repeating steps b) through e) for other pixels in the source digital image to produce a noise residual digital image.

5. The method of claim 4 wherein step c) each noise free pixel estimate is independent from the value of the pixel of interest.

6. The method of claim 4 where one of the noise free pixel estimates is calculated as a linear combination of the values of pixels sampled about the pixel of interest along a line centered in the local region about the pixel of interest.

7. The method of claim 6 wherein the linear combination of the values of pixels sampled about the pixel of interest are in accordance with a cubic relationship.

8. The method of claim 4 wherein only two pixels sampled in the local region about the pixel of interest are used to calculate a noise free pixel estimate.

9. A method of calculating a noise characteristic value from a source digital image, comprising the steps of:

a) receiving a source digital image including pixels corresponding to one or more different colors;

b) selecting a pixel of interest;

c) calculating two or more noise free pixel estimates for the pixel of interest using pixels sampled in the local region about the pixel of interest;

d) selecting a final noise free pixel estimate for the pixel of interest by finding the noise free pixel estimate closest in value to the value of the pixel of interest;

e) calculating a noise residual pixel value by calculating the difference between the value of the pixel of interest and the value of the final noise free pixel estimate;

f) repeating steps b) through e) for other pixels in the source digital image thereby forming a residual digital image from the noise residual pixel values; and

g) using the noise residual pixel values to calculate a noise characteristic value.

10. The method of claim 9 wherein step g) includes calculating the noise characteristic value as a function of the numerical values of the source digital image pixels.

11. The method of claim 9 wherein step g) includes calculating the noise characteristic value as a function of color and the numerical values of the source digital image pixels.

12. The method of claim 9 wherein step g) includes calculating the noise characteristic value as a function of the standard deviation of the noise residual pixel values.

13. The method of claim 9 wherein the source digital image includes two or more digital image channels and further including step h) calculating a residual pixel value for the two or more digital image pixels and i) includes using the residual pixel values for the two or more digital image pixels to calculate a color weighting factor; and using the color weighting factor to exclude residual pixel values from the calculation of the noise characteristic value.

14. The method of claim 9 wherein step d) further includes selecting the final noise free pixel estimate for the pixel of interest by finding the noise free pixel estimate closest in value to the value of the pixel of interest.

15. The method of claim 9 where one of the noise free pixel estimates are calculated as linear combination of the values of pixels sampled about the pixel of interest along line centered in the local region about the pixel of interest.

16. The method of claim 15 wherein the linear combination of the values of pixels sampled in the local region about the pixel of interest are in accordance with a cubic relationship.

17. The method of claim 15 wherein the only two pixels sampled about the pixel of interest are used to calculate a noise free pixel estimate.

18. A method of enhancing a digital image comprising the steps of:

h) using the method of claim 9 to calculate a noise characteristic value; and

i) using the noise characteristic value and the source digital image to generate an enhanced digital image.

19. The method of claim 18 wherein step i) further includes using the noise characteristic value to remove noise from the source digital image to produce the enhanced digital image.

20. The method of claim 18 wherein step i) further includes using the noise characteristic value to sharpen the source digital image to produce the enhanced digital image.